CALIFORNIA HIGH-SPEED RAIL AUTHORITY

BRIEFING: JUNE 2010 OPERATIONS COMMITTEE MEETING
AGENDA ITEM #5

TO: **Board Members Richard Katz, Rod Diridon, and Russ Burns**

FROM: **Tony Daniels, Program Director**

DATE: **June 2, 2010**

RE: **Los Angeles – Anaheim Shared-Track Option Update**

Background

- On March 23, 2010 the Los Angeles County Metropolitan Transportation Authority (Metro) and Orange County Transportation Authority (OCTA) sent a letter to Chairman Pringle requesting the Authority to revisit the concept of a rationalized shared-track option in the Los Angeles to Anaheim section of the California High-Speed Train Project.
- This request was discussed at the April 7-8 Operations Committee and full Board meetings. The Board directed this alternative to be investigated, and if found feasible, to be added into the Alternatives Analysis process and the Draft EIR/EIS report for this section.
- Immediately upon this direction, Authority staff and consultants mobilized a joint task force with Metro and OCTA staff and the railroad owners/operators in the LOSSAN corridor to develop and study a new shared-track alternative based on rationalized passenger service frequencies in the entire corridor between San Diego and Los Angeles Union Station (LAUS). The task force participants have met in numerous meetings over the past two months and continue to discuss and confirm the viability of the proposed shared-track option.
- The conceptual alternative as currently proposed envisions a dedicated passenger alignment composed of two mainline tracks largely within the existing BNSF right-of-way, along the San Bernardino Subdivision between Fullerton Junction and the Hobart Yard vicinity and 2-3 at-grade shared-use (passenger and freight) tracks within the existing OCTA right-of-way from Fullerton Junction to the ARTIC terminal in Anaheim. A primary objective of this shared-use alternative would be to significantly reduce impacts upon the LOSSAN corridor communities between Los Angeles and Anaheim and limit property acquisition needs.
- This concept would operate future planned Amtrak Pacific Surfliner, Metrolink Orange County Line and High Speed Trains as defined and agreed upon by the joint task force on the two dedicated passenger tracks within the BNSF right-of-way, leaving the Metrolink 91/Perris Valley Line and Amtrak Southwest Chief operating on the three-track San Bernardino Subdivision of BNSF. This would result in a significant reduction in passenger

service on the three existing BNSF shared tracks between Fullerton Junction and Hobart Yard. The current assumption is that existing freight traffic operating south of Fullerton Jct. would be temporally separated from HST passenger service.

- In Anaheim, in conjunction with the new shared-track alternative, we have developed a proposed at-grade ARTIC terminal configuration providing two station tracks and a single low-height island platform for use by Metrolink and Amtrak trains and two dedicated HST station tracks serving two high-level side platforms. A simulation study of various service patterns (summarized in an attachment to this memo) determined that a tail track would be needed south of the Santa Ana River to support a fourth future HST train per hour. (The proposed two-station-track/two-platform configuration could support turning up to three high-speed trains per hour at ARTIC terminal without a tail track; however, addition of a fourth train per hour would require construction of a tail track across the river in Orange to mitigate the congestion that would be created in the throat of the station approach by the fourth train.)
- In Los Angeles, a recent at-grade LAUS concept proposed by Metrolink, which is currently being evaluated by the Authority, would provide eight tracks and four low-height island platforms for use by Metrolink and Amtrak trains and six dedicated HST tracks serving three high-level island platforms to support high-speed train service between Northern California and Anaheim and future San Diego service. Four of the proposed Amtrak/Metrolink tracks would run through; and four would be stub-ended at the south end of the platforms (as they are today). The simulation study determined that for both 3 and 4 high-speed trains per hour service scenarios, storage space would be needed to stage three 400-meter trains south of, and in close proximity of LAUS. A suitable location for such a staging yard has not yet been identified.
- Intermediate stations on the proposed new passenger-only tracks through Fullerton and Norwalk/Santa Fe Springs are being studied. The Authority is currently assuming that only one of these intermediate stations would be served by high-speed trains; however, this is undergoing further examination and consideration.
- A key meeting is scheduled with the BNSF on May 27 in Los Angeles to present the conceptual alternative for planning purposes and gain feedback from the BNSF to help determine the feasibility of the alternative moving forward.

Discussion

- The joint task force meetings held to date have been very productive. In support of the Authority, PB has led and performed the technical and operational analyses, assisted by the STV team. Amtrak and the stakeholder transportation agencies of Los Angeles, Orange, Riverside, and San Diego counties have all provided additional technical and operational review and support.
- Operational studies to date generally confirm the feasibility of operating the rationalized passenger service on two shared (passenger-only) tracks between just north of Hobart Yard and ARTIC terminal.
- The proposed at-grade configurations of both ARTIC and LAUS are still under review. There are several technical issues that require further analysis and resolution at each of these stations before determining their feasibility/viability.
- Technical and operational issues still under study include the ability to turn, service, and/or store the required number of high-speed trainsets in this section to support Phase 1 HST service and accommodate the future LA-San Diego connection and service requirements. The two attachments to this memo provide summaries of the technical and operational issues that are still being discussed and will need to be fully resolved.

- As of now, before meeting with BNSF to discuss this concept in detail, it is premature to say whether their long-term requirements can be fully addressed. Likewise, there are issues with UPRR freight operations in the LOSSAN corridor that need to be discussed and resolved. [1]
- Staff is aiming to make a determination and formal recommendation to the Board on the shared-track alternative technical and operational feasibility/viability, order-of-magnitude costs, effect on the CHSRA environmental process and schedule (i.e., ability to meet the mandated September 2011 Notice of Determination/Record of Decision dates to maintain federal ARRA grant eligibility) at the July 7-8 Committee and Board meetings scheduled to be held in Los Angeles.

Next Steps

- Meet with the BNSF to discuss and obtain their conceptual approval of the shared-track approach. Also confer with UPRR to assure their requirements can be met.
- Complete the required technical and operational analyses and reviews of the LA-Anaheim shared-track alternative to determine its feasibility/viability, order-of-magnitude cost, and effect on the schedule for the NOD/ROD if it were to be carried forward as a new alternative in the environmental review process.
- Continue development of the at-grade LAUS and ARTIC station designs. Provide input to the City of Anaheim on the potential effects of the at-grade ARTC station alternative on their Terminal Design, which has been put on-hold for 30 days pending completion of the shared-track alternative analysis.
- Substantiate and finalize the ridership and revenue forecasts for 3, 4, and 5 peak-hour trains per direction between Los Angeles and Anaheim.
- Brief the Authority executive staff, the FRA, and the AG's office on the findings of the joint study effort and prepare a recommendation to the Board in late June 2010 for action at the July 8 Board meeting in Los Angeles.

Attachments:

- ✓ Draft summary of the shared-track alternative operations analysis
- ✓ List of unresolved technical issues
- ✓ Preliminary forecasts of HST ridership and revenues for 3, 4, and 5 peak-hour trains per direction between Los Angeles and Anaheim

[1] Specifically, one of the significant freight service issues is to determine how the existing "cross-plant" local freight train movements in this section would be operated in the future across the mainline tracks over which Metrolink, Amtrak and the high-speed trains would be running. Unless the two passenger-only tracks can be fully grade-separated from the BNSF freight traffic, temporal separation would be required for FRA approval. "Non-compliant" passenger equipment, such as the proposed high-speed trainsets, would not be allowed to operate in a shared corridor with freight trains without temporal separation or safety barriers between passenger and freight tracks as needed,

Attachment 1: Draft summary of the shared-track alternatives operations analysis

As part of the process associated with ongoing evaluation of shared-used operations in the LOSSAN corridor, rationalized connecting passenger rail services, and the refinement of alternatives being developed for High Speed Train (HST) service between Los Angeles and Orange County, an operational analysis was undertaken to determine the feasibility of operating the HST in shared-track operations with conventional passenger trains between ARTIC station in Anaheim and LAUS in Los Angeles.

In response to the April 8 Board direction, the CHSTP Program Management Team (PMT) hosted several discussions with the stakeholder transportation agencies of Los Angeles, Orange, Riverside and San Diego Counties, as well as Amtrak and Metrolink, to discuss and obtain consensus with regard to service level and stopping pattern assumptions for the new shared operation alternative. These assumptions are summarized below.

Commuter (Metrolink)

- 3 trains per hour (TPH) between Los Angeles and Fullerton during peak period and in the peak direction
- 4 TPH between Fullerton and Anaheim (1 commuter train each hour from San Diego County would terminate at Fullerton at the Fullerton Turnback Facility currently under construction)

Regional (Amtrak)

- 1 TPH throughout the day between Los Angeles and San Diego (total of 16 trips each direction)

Express (High Speed)

- Two service assumptions scenarios were examined for peak period operations between Anaheim and Los Angeles for high speed trains. The first scenario assumed 3 TPH and the second scenario assumed 4 TPH.

In addition to the service level assumptions described above, four service-stopping patterns between Anaheim and Los Angeles were assessed in the operations analysis.

- Scenario 1 – All services (Express, Regional, Commuter) stop at Anaheim, Fullerton, Norwalk and Los Angeles
- Scenario 2 – HST stops at Anaheim, Fullerton and Los Angeles; Regional and Commuter stop at Anaheim, Fullerton, Norwalk and Los Angeles.
- Scenario 3 – HST stops at Anaheim, Norwalk and Los Angeles; Regional and Commuter stop at Anaheim, Fullerton, Norwalk and Los Angeles.
- Scenario 4 – All services (Express, Regional, Commuter) stop at (only) Anaheim, Norwalk and Los Angeles (no stop at Fullerton).

The operations analysis focused on a comprehensive review of the corridor between San Diego and Los Angeles to estimate the overall operating capacity and performance of the railroad network to reliably support shared track operations. In addition, the analysis revealed the potential impact that operations along the single track in San Diego and south Orange Counties may have on the, shared use dedicated passenger segment between Anaheim and Los Angeles.

The results of the simulation and accompanying analysis of all four service patterns assuming 3 TPH for the HST showed that it was feasible to achieve a reliable shared use operation along the corridor between Anaheim and Los Angeles. The 3 TPH scenarios assumed an ARTIC station configuration of four-tracks (two conventional passenger service station tracks and two HST service station tracks) and two connecting tracks between ARTIC and the proposed Anaheim West Yard for the movement of HST between the station and yard. The analysis assumed no "tail" track(s) within ARTIC and the results verified that the operation of 3 (HST) does not require a "tail" track.

The results of the simulation and accompanying analysis of all four service patterns assuming 4 TPH for the HST revealed that the ARTIC configuration with two station tracks for the HST, and no 'tail" track(s), does not provide sufficient practical capacity to reliably deliver the shared use operation. One "tail track" is required to provide the mitigation needed to relieve "congestion" in the throat of the station approach to support 4 TPH for HST.

Furthermore, analysis of the simulation model results concluded that both the 3 TPH and 4 TPH service scenarios for the HST clearly identified the requirement for track storage space to "stage" three 400 meter trains south of, and in proximity to, Los Angeles Union Station (LAUS). These "staging" tracks are needed because of the volume of revenue passenger trains assumed in the morning peak period, peak direction. During this time period, 4 TPH for Metrolink's Orange County Line, 1 TPH for Regional Service (Pacific Surfliner) and 3 TPH/4 TPH for the HST are assumed; for a total of 8 TPH/ 9 TPH that have to adhere to specific timetable schedule requirements (and station stops along the main line route).

In addition, there are up to 4 non-revenue TPH traveling from the Anaheim West Yard to LAUS for revenue train departures (north of LAUS). These LAUS departures (from the non-revenue trains originating in Anaheim West) conform to timetable schedules that require the trains to arrive and be positioned in LAUS at specific times. In the simulations conducted, it was not possible to meet all of the LAUS train departure schedule requirements with direct train movements from Anaheim West to LAUS because of main line conflicts with the revenue trains (HST and conventional) operating north of ARTIC. Therefore, the "staging" tracks are needed for up to 3 trains at a time near LAUS so that the deadhead trains can operate from Anaheim West when main line slots are available and be "stored" near LAUS until their schedules require them to move (from the staging tracks) into the station. It is worthy to note that these "staging" tracks in proximity to LAUS could be used to store trains overnight (after being serviced at the Anaheim West Yard) offering the potential to decrease the total number of storage tracks required at Anaheim West with a corresponding reduction in the size of the land parcel footprint of the facility.

Attachment 2: Unresolved technical issues

Compliant / Non- Compliant Equipment Operations – The anticipated Caltrain waiver that would allow operation of compliant and non-compliant passenger train equipment to operate on shared-track is under review by FRA and has not been approved.

Storage Track location – For the shared-track alternative to be operational viable, three double trainsets would need to be stored somewhere north of Hobart Yard, south of LAUS. Assuming the Metrolink proposal for LAUS were adopted, if this HST storage were located between 1st and 4th Streets, additional ROW would be needed, which would likely impact the LA Metro yard. This needs to be further investigated and resolved.

Attachment 3: Preliminary forecasts of HST ridership and revenues for 3, 4, and 5 peak-hour trains per direction between Los Angeles and Anaheim

In 2010, Cambridge Systematics prepared two forecasts of riders, revenues, and station boardings for Phase 1 and the Full System for the year 2030, one assuming five (5) trains per hour per direction between Los Angeles and Anaheim at the peak period, and a second with three (3) such trains per hour. Parsons Brinckerhoff estimated an intermediate scenario of four (4) trains per hour from the CS estimates, applying the sensitivity of ridership to frequency shown in the two CS scenarios. The HST service riders, revenues, and boardings at the Anaheim Regional Transportation Intermodal Center (ARTIC) are shown below in Table 1 for Phase 1, and in Table 2 for the Full System. All the forecasts assume HST fares at 50% of air fare and market-based parking charges.

Table 1 Phase 1 HST Ridership & Revenue, and ARTIC Boardings, year 2030

LA - Anaheim Trains per Direction at Peak Hours	Annual System Riders (millions)	Annual System Revenue (2009$$, millions)	Anaheim Weekday Boardings
5	54.4	$2,385	29,300
4	53.8	$2,356	28,500
3	52.9	$2,308	27,300

In Phase 1 the reduction to 4 trains per hour reduces system-wide revenues and riders by 1%; the cut to 3 trains per hour drops these another 2% for a total slippage of around 3%. Boardings at ARTIC are more sensitive than system-wide results, dropping 3% in going from 5 to 4 trains, and 7% from 5 per hour to 3.

Table 2 Full System HST Ridership & Revenue, and ARTIC Boardings, year 2030

LA - Anaheim Trains per Direction at Peak Hours	Annual System Riders (millions)	Annual System Revenue (2009$$, millions)	Anaheim Weekday Boardings
5	93.7	3,876	21,700
4	93.0	3,854	20,600
3	91.7	3,817	18,700

In the Full System, the reduction to 4 trains per hour reduces system-wide revenues and riders by less than 1%; the cut to 3 trains per hour drops them another 1% for a total of around 1.75%. Boardings at ARTIC are more sensitive than system-wide activity, dropping 5% in going from 5 to 4 trains per hour, and 14% from 5 to 3 per hour.

Additional material requested by Claudio Dallavalle

The changes in daily boardings at ARTIC (as well as those at Fullerton, Norwalk, and LA Union Station) will take place primarily within the peak hours that experience most of the drop in frequency. This would lower the peak hour boardings by more than the average for the full day. With 3 trains instead of 5, ARTIC peak hour boardings could be down by 10-15% in Phase 1, and 20-25% in the Full System. With 4 in place of 5, the drop could be 4-6% in Phase 1, and 7-10% in the Full System.